

Managing Source Control Efforts in the Thea Foss Waterway, Tacoma, Washington

Mary Henley

City of Tacoma, Public Works Department Utility Services Engineering Division

Abstract

In 1994, the City of Tacoma entered into an Order with the Environmental Protection Agency (EPA) to develop a remedial action plan for contaminated sediments in the Thea Foss Waterway. The City of Tacoma has been identified by EPA as a Potentially Responsible Party because of municipal stormwater discharges to the waterway, which include drainage from approximately 25% of the area of the city. Achievement of source control must be accomplished before actual remediation of the sediments can occur. A number of studies are underway to determine which sources and contaminants have the potential for recontamination. For the storm drains, this includes low detection limits, whole-water sampling, and in-line sediment trap sampling (performed in cooperation with the Department of Ecology). Sample results will be used to develop input loadings to the WASP Contaminant Transport Model. Modeling results are being used to focus the city's source control efforts. Industrial inspections and implementation of Best Management Practices will be used to control sources to the extent possible. If ubiquitous levels of contaminants in urban runoff are found to pose a threat to recontaminate remediated sediments, the City will continue to work with regulatory agencies to develop a plan that will allow sediment remediation to proceed.

Contaminant Transport Processes in Thea Foss Waterway—Managing Source Control and Natural Recovery

Dr. Todd Thornburg

Hart Crowser, Inc.

Dana DeLeon

Cosmopolitan Engineering Group

James L. Martin

ASCI Corporation

Abstract

Because of its long and diverse urban history, the Thea Foss Waterway in downtown Tacoma has accumulated PAHs, phthalates, mercury, PCBs, and other constituents at concentrations that exceed the Sediment Quality Objectives for Commencement Bay. Sources have historically included inputs from municipal storm drains, erosion of contaminated banks or upland soils, groundwater seeps, industrial discharges, and other sources. To evaluate the current status of source controls in and around the waterway, and to predict future trends in sediment concentrations, a contaminant transport model was constructed using EPA's Water Quality Analysis Simulation Program (WASP). Comprehensive field collection efforts have helped to define site-specific environmental conditions for the waterway, and the physical, chemical, and biological input parameters required by WASP. In addition to sediment testing conducted during Pre-Remedial Design, extensive sampling of base and storm flows in municipal outfalls, tracer studies of advection and dispersion, water column chemistry, radioisotopic dating, biodegradation experiments, installation of pipeline sediment traps (in cooperation with the Department of Ecology), and in-water monitoring wells are among the studies that have been undertaken by the City of Tacoma. The model is being used successfully to understand the cumulative effects of diverse pollutant loads on the waterway, to help the City manage its source control efforts in the upland drainage basins, and to identify parts of the waterway that will naturally recover without the need for active remediation.